

CLAIMS

What is claimed is:

- 1 1. A method for bringing first and second surfaces into contact, comprising the
2 steps of:
 - 3 bowing the first surface in a controlled manner;
 - 4 moving the bowed first surface toward the second surface at a
5 predetermined rate until the first surface contacts the second surface at a single point of
6 contact; and
 - 7 continuing to move the bowed first surface toward the second surface until
8 the single point of contact expands to a circle of desired radius.
2. A method according to claim 1, further comprising the step of aligning the first
surface and the second surface before bringing them into contact.
3. A method according to claim 1, wherein the step of bowing is accomplished by
pressurization of the first surface.
4. A method according to claim 1, wherein the step of bowing is accomplished by
rolling a roller against the first surface.
- 1 5. A method for contact printing, comprising the steps of:
 - 2 applying a thin film of material to an offset substrate;
 - 3 creating a pattern in the thin film of material by bringing a stamp into
4 contact with the offset substrate; and
 - 5 transferring the patterned film to a final substrate by bringing the offset
6 substrate into contact with the final substrate.

6. A method according to claim 5 wherein the stamp has a contact angle lower than the contact angle of the offset substrate and the final substrate has a contact angle lower than the contact angle of the offset substrate.
7. A method according to claim 5, further comprising the step of bringing the offset substrate into contact with a second final substrate to transfer any remaining material to the second final substrate.
8. A method according to claim 5, wherein the step of transferring is performed according to the method of claim 1.
9. A method according to claim 5, wherein the step of transferring is performed according to the method of claim 3.
10. A method according to claim 5, wherein the step of transferring is performed according to the method of claim 4.
11. A method according to claim 5, further comprising the step of reversing the patterned film by transferring the patterned film to a second offset substrate before transferring it to the final offset substrate by bringing the offset substrate into contact with the second offset substrate.
12. A method according to claim 5, further comprising the step of heating the material before or while applying it to the offset substrate.

13. A method according to claim 5, further comprising the step of heating the patterned film before or during the step of transferring.
14. A method according to claim 5, further comprising the step of modifying the patterned film before the step of transferring.
15. A method according to claim 14, wherein the step of modifying includes adding material to the patterned film.
16. An apparatus for bringing first and second surfaces into contact, comprising:
 - means for creating a controlled bow in the first surface; and
 - means for moving the first surface toward the second surface at a predetermined rate until the desired amount of contact between the first and second surfaces is achieved.
17. An apparatus according to claim 16, further comprising an alignment mechanism to control the relative positions of the first and second substrates.
18. An apparatus according to claim 17, wherein the alignment mechanism includes an optical alignment component.
19. An apparatus according to claim 16, wherein the means for creating a controlled bow is a pressurization mechanism.
20. An apparatus according to claim 16, wherein the means for creating a controlled bow is a roller.

21. An apparatus according to claim 16, wherein the first surface is a stamp made from elastomeric material.

22. An apparatus according to claim 18, wherein the first surface is optically clear.